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PHOTOGRAPHIC ATLAS OF THE MOON.

[EXTRACTS FROM A CIRCULAR.]

Based chiefly on focal negatives of the Lick Observatory, to the scale of ten feet to the Moon's diameter; executed by Professor LADISLAS WEINEK, Ph. D., Sc. D., Director of the Imperial and Royal Observatory of Prague. Published by CARL BELLMANN in Prague [price £1 for each part (twenty plates); ten parts will complete the first series].

“My long experience in producing drawings and pictures of lunar landscapes, some with the direct aid of the telescope, others by enlargement from a number of photographic plates of the Lick Observatory, has supplied me with the materials for undertaking the following work, which claims to produce an accurate and artistic representation of the whole visible surface of the Moon.

Dissatisfied with the photographic enlargements made by experts in various quarters, I began, on April 19, 1893, a series of experiments, with a view to discover a method which, while rendering the minutest details with absolute exactness and accuracy, might at the same time ensure a plastically perfect and beautiful delineation of the object portrayed. That method I flatter myself to have now found. I intend to publish, in the immediate future, an account of it.

The materials that form the basis and bulk of the Photographic Lunar Atlas, begun by me in 1894 and now almost completed, are mainly derived from the Lick Observatory. The contributions from that source consist of ninety-four exquisite negatives, including the various phases of a whole lunation, taken at the focus of the telescope of 36-inch aperture of that observatory during the years 1890–1896, and of about 140 diapositives of the same size. To these must be added four striking lunar negatives made by Messrs. LOEWY and PUISEUX at the focus of the large Equatorial Coudé (of 60-*cm* aperture and 18-*m* focal length) of the Paris Observatory, and two excellent lunar diapositives of the Arequipa branch station of the Observatory of Cambridge (Mass.), taken by Professor BAILEY with the telescope of 13-inch aperture, and enlarged with an ocular placed near the focus. Hence, my Photographic Lunar Atlas had to be based essentially on the lunar negatives of the Lick Observatory; whilst the enlargements

of Paris and Arequipa plates are added chiefly for the purpose of facilitating comparative study.

The scale adopted in enlarging the Lick negatives is uniformly twenty-four times the original, whilst the scale of enlargement of the Paris negatives and Arequipa diapositives is slightly less. For the first, the enlargement corresponds, at the mean distance of the Moon from the Earth, to a lunar diameter of 10 feet ($= 3, 1 m, 1 mm = 1, 1 km = 0, "6$). For the last, the enlargement gives a diameter of 4 metres ($1 mm = 0,89 km = 0, "48$) i. e. the double of the diameter of SCHMIDT'S Map. In enlarging the focal plates twenty-four times, one brings out to the naked eye, and without any difficulty, the smallest details of the lunar surface, while its plastic beauty is not altered; and in the second, a simple ratio with the map of SCHMIDT is maintained. The following instance will help to illustrate this remark: On the photographic enlargement (twenty-four times) from a Lick negative, June 27, 1895, 8^h 21^m 1^s, P. S. T., I discovered, on January 10, 1896, on the top of the mountain in the northwestern part of the interior of *Cyrillus*, a small round object like a crater of 1. 1 km in diameter. I at once communicated my observation to the French selenographer, C. M. GAUDIBERT, and sent him at the same time the print containing it. On the 20th of January, 1896, he was able to confirm, without any possible doubt, the existence of this crater on that mountain, with his telescope of 260 mm aperture. The diameter of that crater is 1 mm on the print, and it would hardly be visible to the naked eye were the enlargement made on a smaller scale.

The work of enlarging from the above focal plates went on up to Easter, 1897. From April 19 to December 1, 1893, 100 photo-lunar enlargements were made; most of these are of the size of $13 \times 18 cm$; and they come from diapositives; they comprise experiments of the utmost variety. From December 1, 1893, up to Easter, 1897, I made 485 photo-lunar enlargements from original negatives only (with the exception of seven enlargements taken from two Arequipa diapositives), and of the size of 21×26 or of 26×31 . From among these the first 196 were made by myself, with an assistant for the development of the plates, etc.; the last 289 were executed, since November 1894, by myself alone in all the stages of their execution. The last, mentioned enlargements, based, too, on more favorable original negatives, were the first to give complete satisfaction. Funds to

defray the very considerable outlay for plates in pursuing this lengthy and laborious work were provided, partly by a government grant and a grant from the Vienna Academy of Science, partly by the munificence of private donors, especially Baron ALBERT VON ROTHSCHILD in Vienna, and Miss CATHERINE W. BRUCE in New York.

And now that the principal part of this preparatory work is done, the plan is to publish at Prague a Lunar Photographic Atlas on a scale of ten feet, relatively four metres, to the diameter of the Moon, having 200 maps of the size of 26×31 cm, containing the principal lunar formations viewed under the most varied conditions of illumination. If this atlas is favorably received, I propose to publish, later on, a second series of 200 maps, to complete the first. The 200 maps first mentioned come from enlargements made since November, 1894, and show the best of what has been done up to the present time. The order in which the pictures will be arranged must not be supposed to follow the phases of the waxing or waning Moon; it will rather be determined by the degree of excellence or of beauty exhibited in the enlargements available for publication. Shown at the top of each sheet will be the selenographical latitude and longitude for the centre of the picture, and also the selenographical longitude of the terminator for the latitude 0° . By this means it will be easy for every one to arrange the sheets according to the relative positions of the lunar objects they portray, or according to the terminator of the corresponding lunar phase. To secure the utmost precision in the minutest details, the reproductions of enlargements done at Prague will be executed by the phototype process in a manner as closely approaching perfection as possible. They will be printed direct from my enlarged glass diapositives, under my constant personal supervision and control, by the well-known Art-Photographical Institute of CARL BELLMANN, Prague. The enclosed print, showing the Maginus Walled Plain* (L. O. 1895, Oct. 9, 16^h 20^m 2^s—2, 5, P. S. T.), is an example of the way in which each map will be printed on card board of the size of 33×43 cm, so that they may be easily handled at the telescope or framed for scientific collections. Each map will be detached, and one fascicle, containing twenty maps, will appear every two—

* The circular is accompanied by a reproduction of Professor WEINER's enlargement of *Maginus*, which is admirable in every respect. Copies of the circular and this plate will be sent by CARL BELLMAN, as above, to those who apply to him. E. S. H.

three months. This will obviate the difficulty that observatories, academies, scientific societies, and institutions might else find in purchasing the entire work in one issue.

The publication of the atlas in the dimensions proposed (ten issues, making a total of 200 lunar landscapes) cannot be undertaken until the requisite pecuniary support is forthcoming in the shape of promises of numerous subscribers to the work. I venture to appeal in the first instance to the various observatories at home and abroad, and to solicit their promises to become subscribers for the ten issues, each to contain twenty lunar landscapes.

Pursuing, as I do, different ends from those of the Paris Lunar Atlas (its diameter of nearly $2\frac{1}{2}$ metres makes it a little larger than SCHMIDT'S map) which aims at securing great beauty of relief and plastic effect, as well as from those of the Mt. Hamilton Atlas (its diameter is equal to that of MÄDLER'S map, i.e. one metre), which endeavors to preserve the faint contrasts of light and shade in their true value, my enlargements published in the Prague Lunar Atlas should have ample justification for publication, in that they will together afford a faithful and accurate reproduction of the striking results obtained in the field of photo-selenography at the end of the nineteenth century."

PROFESSOR DR. L. WEINEK, Director of the Imperial
and Royal Observatory of Prague.

PRAGUE, April 18, 1897.

TRIAL OF THE CROSSLEY REFLECTOR.

At the beginning of April, 1897, Professor HUSSEY was placed in full charge of the CROSSLEY reflector, to give it a thorough trial, visually at the Newtonian focus, and photographically at both the Newtonian and principal foci, thus continuing the work begun by him in June, 1896.* A new driving clock for the instrument has been made by the instrument-maker of the Lick Observatory during the past winter, from drawings by Professor HUSSEY. It is on the same general plan as the driving-clock of the 36-inch equatorial, and promises well. The weights on the double conical pendulum are about twenty-eight pounds each. Mirror A is now in the instrument. During the winter and spring the BRUCE spectrograph has been constructed (at Mount Hamilton)

*See *Publications A. S. P.*, Volume VIII, page 236.